

# Notice of Allowability

Application No.

09/967,084

Examiner

Michael Y. Won

Applicant(s)

BEIER ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed March 12, 2007 and Interview conducted on April 26, 2007.
2. ☒ The allowed claim(s) is/are 1-10 and 22-32 (renumbered 1-21).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date attached.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

2. Authorization for this examiner's amendment was given in a telephone interview with Gordon R. Lindeen III (Reg. No: 33,192) on April 26, 2007.

3. The application has been amended as follows:

In the **specification**, on page 7:

**[0020]** The present invention may be provided as a computer program product that may include a machine-readable medium having stored thereon instructions that may be used to program a computer (or other electronic devices) to perform a process according to the present invention. The machine-readable medium may include, but is not limited to, floppy diskettes, optical disks, compact disc read-only memories (CD-ROMs), and magneto-optical disks, ROMs, random access memories (RAMs), erasable programmable read-only memories (EPROMs), electrically erasable programmable read-only memories (EEPROMs), magnetic or optical cards, flash memory, or other type of media / machine-readable medium suitable for storing electronic instructions. Moreover,

the present invention may also be downloaded as a computer program product, wherein the program may be transferred from a remote computer (e.g., a server) to a requesting computer (e.g., a client) by way of data signals embodied in a carrier wave or other propagation medium via a communication link (e.g., a modem or network connection). ~~Accordingly, a carrier wave or other propagation medium shall be regarded as comprising a machine-readable medium for the purpose of the present specification.~~

In the **claims**:

1. **(Currently Amended)** A method comprising:

receiving a packet at a network device, the packet including a header and a payload;

tagging the packet, by a first packet-processing application, with a cache lookup key based upon original contents of the header, the cache lookup key indicating where in a unified cache a cache entry corresponding to the packet will be stored, the cache lookup key being stored in a field of the unified cache, and the cache lookup key being part of a packet descriptor of the packet;

translating the header of the packet from the original contents by an address translation packet-processing application after tagging the packet;

forwarding the packet descriptor and the packet to a second packet processing application after translating the header; and

the second packet-processing application accessing the cache entry from the unified cache using the cache lookup key from the packet descriptor added by the first packet processing application, wherein the unified cache is shared by multiple packet forwarding processes and allows a flow to be classified once and then subsequent packets can be processed with a single lookup in the unified cache.

**8. (Currently Amended)** A method comprising the steps of:

a step for determining whether a cache lookup key is present in a packet descriptor associated with a received packet;

a step for performing a lookup in a unified cache with the cache lookup key if it is determined that the cache lookup key is present in the packet descriptor;

a step for creating a new cache entry in the unified cache based upon information in a header of the received packet and tagging the packet with a new cache lookup key if it is determined that the cache lookup key is not present in the packet descriptor or the lookup does not locate an appropriate existing cache entry, the new cache lookup key being based upon contents of the header of the packet;

a step for storing the new cache lookup key in a field of the unified cache;

a step for conveying the cache lookup key ~~from the~~ from a NAT packet-processing task to a packet filtering packet-processing task;

a step for updating an existing cache entry with module-specific information by the NAT packet processing task, the updating including translating the header of the packet; and

a step for accessing the new cache entry from the unified cache by the packet-filtering packet processing task using the cache lookup key, after translating the header, wherein the unified cache is shared by multiple packet forwarding processes and allows a flow to be classified once and then subsequent packets can be processed with a single lookup in the unified cache.

**22. (Currently Amended)** ~~A tangible article of manufacture in the form of a~~ machine-readable medium having stored thereon data representing instructions that, if executed by one or more processors of a network device, cause the one or more processors to:

receive a packet including a header and a payload;

tag the packet, by a first packet-processing application of a plurality of packet-processing applications, with a cache lookup key based upon original contents of the header, the cache lookup key indicating where in a unified cache a cache entry corresponding to the packet will be stored;

the cache lookup key being stored in a field of the unified cache, and the cache lookup key being part of a packet descriptor of the packet;

translate the header of the packet from the original contents by an address translation packet-processing application after tagging the packet;

forward the packet descriptor and the packet to a second packet processing application after translating the header; and

use the cache lookup key from the packet descriptor rather than generating a new cache lookup key based upon current contents of the header by a second application accessing the cache entry from the unified cache subsequent to the tagging by the first packet-processing application, wherein the unified cache is shared by multiple packet forwarding processes and allows a flow to be classified once and then subsequent packets can be processed with a single lookup in the unified cache.

***Allowable Subject Matter***

4. Claims 1-10 and 22-32 are allowable over prior art of record and in light of Examiner's Amendments and arguments presented in Amendment filed March 12, 2007.

5. The following is an examiner's statement of reasons for allowance:

The prior art of record does not disclose, teach, or suggest neither singly nor in combination the claimed limitation of "second packet-processing application accessing the cache entry from the unified cache using the cache lookup key from the packet descriptor added by the first packet processing application, wherein the unified cache is shared by multiple packet forwarding processes and allows a flow to be classified once and then subsequent packets can be processed with a single lookup in the unified

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cache" as recited in independent claim 1 and similarly recited in independent claims 8 and 22.

6. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

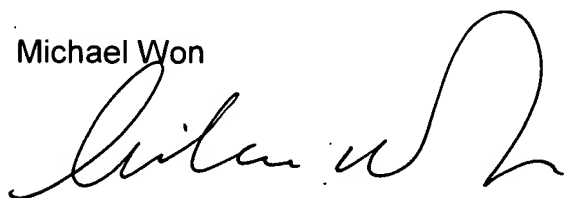
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Y. Won whose telephone number is 571-272-3993. The examiner can normally be reached on M-Th: 7AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saleh Najjar can be reached on 571-272-4006. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael Won

A handwritten signature in black ink, appearing to read 'Michael Won', with a large, stylized loop at the end.

April 26, 2007